Novel Vehicle-to-Everything Rollover Antenna Enabled by Soft-Robotics Pneumatic Activation

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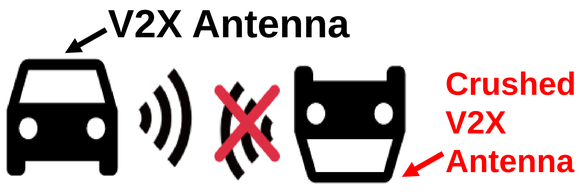
Problem

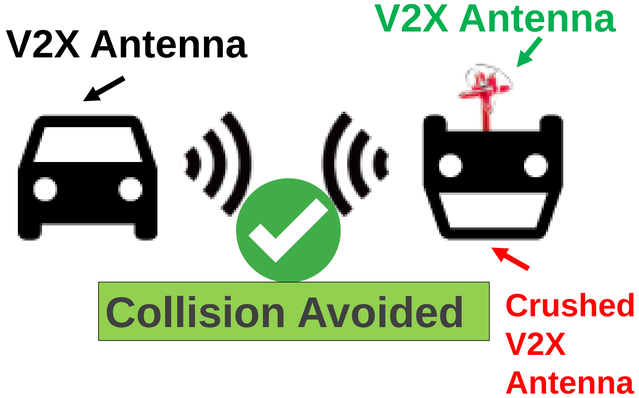
How can a Vehicle to Everything (V2X) antenna provide safety alerts using wireless communications, if the vehicle is upside down?



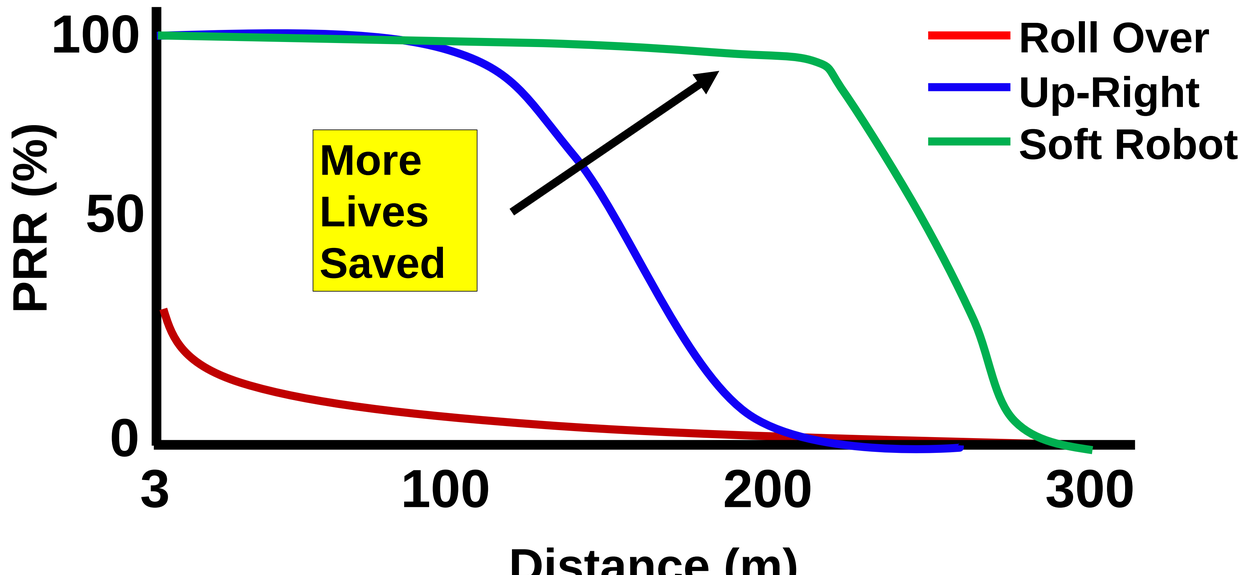
Vehicles can't hear roll-over car due to damaged antenna on roof!

Solution

On the undercarriage, equip a soft-robotic antenna attachment that will communicate a warning to nearby vehicles.



Methodology



An up-right vehicle will communicate with a **high** packet reception rate (PRR).

A rolled over vehicle will have a **low** PRR.

The soft robotic antenna will **improve** the rolled-over vehicle PRR.

A motorized air pump will inflate the plastic tubing that will then deploy the antenna.

Special Thanks to OUR for URCA Award

Motivation

3% of car accidents involve rolled over vehicles

35% of roll-over accidents result in death

Rolled over vehicles cannot reliably send warning signals!

Future Work

Additional actuators and sensors can be attached to the antenna to give it the ability to maneuver around wreckage.

The antenna will be able to reduce road deaths and provide more reliable accident data.